

FRANKLIN COUNTY
PETITION/APPLICATION FOR COMPREHENSIVE PLAN CONFORMANCE REVIEW
(Type or Print)

I/We, VERIZON WIRELESS (DREW PATTERSON), as Owner(s), Contract Purchasers, or Owner's Authorized Agent of the property described below, hereby apply to the Franklin County Board of Supervisors for a Comprehensive Plan conformance review on the property as described below:

1. Petitioners Name: VERIZON WIRELESS
2. Property Owner's Name: VERNON AND ALMA JEAN JONES
Phone Number: N/A
Address: 6606 FERRUM MTN. ROAD
CALLAWAY Zip: 24067
3. Exact Directions to Property from Rocky Mount: Left on VA-40W/Franklin St., After 2 miles, turn right on Rt. 640/6 MILE POST RD., After 7 miles, turn right on Rt 602, 3 miles and property is on right
4. Tax Map and Parcel Number: 0610000700
5. Magisterial District: BW
6. Property Information:
 - A. Size of Property: 58.25 AC.
 - B. Existing Zoning: NZ
 - C. Existing Land Use: AGR/UNDEV 20-99 ACR
 - D. Is property located within any of the following overlay zoning districts:
NO Corridor District NO Westlake Overlay District NO Smith Mountain Lake Surface District
 - E. Is any land submerged under water or part of a lake? Yes ☒ No ☐ If yes, explain.

7. Proposed Comprehensive Plan conformance review Information:
 - A. Proposed Land Use: 195' MONOPOLE TOWER
 - B. Size of Proposed Use: .23 AC. LEASE AREA
 - C. Other Details of Proposed Use: REQUEST ALSO INCLUDES 80' x 80' FENCED COMPOUND WITH ASSOCIATED GROUND EQUIPMENT

Checklist for completed items:

- ☒ Application Form
- ☒ Letter of Application
- ☒ List of Adjoining Property Owners and Addresses (SUBMITTED PREVIOUSLY)
- ☒ Concept Plan
- ☒ Application Fee

I certify that this application for a Comprehensive Plan conformance review and the information submitted herein is correct and accurate.

Petitioner's Name (Print): DREW C. PATTERSON

Signature of Petitioner: *D. C. Patterson*

Date: 3/29/13

Mailing Address: 1831 RADY COURT

RICHMOND, VA 23222

Telephone: 804-363-0891

Owner's consent, if petitioner is not property owner:

Owner's Name (Print): VERNON L. JONES

Signature of Owner: *Vernon L. Jones*

Date: 4-3-2013

Date Received by Planning Staff: _____

Time: _____

Clerk's Initials: _____

ADJACENT PROPERTY OWNERS

DO
NOT
COMPLETE

Adjacent property owners are mailed a notice of the request. Please provide each owner's name and mailing address plus zip code for every property adjacent to the site and directly across from any public right-of-way adjoining the site. Names and addresses are available in the County Real Estate office in the Courthouse.

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

NAME: _____ ADDRESS: _____

TAX MAP NUMBER: _____

**COMPREHENSIVE PLAN CONFORMANCE REVIEW
LETTER OF APPLICATION
"CALLAWAY" – JONES PROPERTY
10/18/16**

Proposed use of the property:

Cellco Partnership d/b/a Verizon Wireless (hereafter "VZW"), respectfully requests a Comprehensive Plan Conformance Review to allow the installation of a new cell tower on a 58.25 acre non-zoned parcel located at 6606 Ferrum Mountain Road in the Blackwater Magisterial District. The subject property is identified as Tax Map parcel #0610000700 (hereafter "the property").

The proposed tower will be contained within a 10,000 s.f. lease area located in the southeast corner of the property. The site is located at an elevation of 1397 feet Above Mean Sea Level (AMSL) and will include a 195 foot steel monopole (199 feet to the top of the antennas and lightning rod). The monopole will be fitted with one (1) antenna array, a lightning rod (not to exceed 4 feet) and coaxial cables that will be run vertically inside the monopole to the extent possible. Associated ground equipment will be installed within a six (6) foot chain-link fence enclosure at the base of the monopole.

The effect of the proposed use on the surrounding area:

The most significant effect that the proposed facility will have on the surrounding area is improved wireless service to citizens living and travelling in the area. The proposed monopole and related equipment will have limited visual impact on the surrounding area for the following reasons:

- The tower will be over 900 feet from Ferrum Mountain Road and over 200 feet from the closest adjacent property line (southern property line – property owned by Susan and Richard Jamison);
- The tower will have limited visibility and the ground equipment will have no visibility due to existing trees and the strategic location on the property away from roads and residences (see attached photosims);
- The property is heavily wooded and very few trees must be removed to construct the tower;
- VZW, although not required, has provided a 100 foot wooded buffer around the leased area in order to ensure that the tower remains screened to the maximum extent possible.

The reason for the request:

The subject property is within an area of Franklin County that has little to no VZW coverage. VZW has chosen a site that is not only crucial to provide improved wireless service to surrounding citizens (in-car and in-building coverage) but it is also a site that will have limited visibility from adjacent properties due to the existing vegetation and the distance from adjacent property lines and residences.

The effect of the proposed use on public health, safety, and welfare:

The proposed facility would contribute to public health and safety by providing additional access to emergency services using E-911. Over 70% of E-911 calls are made from cell phones; therefore, having service in this area is critical to optimum access to emergency services. Further, wireless telephone and internet services have become necessities for students and others working from home, for businesses and governments, and for the convenience of all citizens. Expanding the wireless network in this area of the county will improve the welfare of Franklin County citizens.

Franklin County Comprehensive Plan Policies for New Telecommunications Facilities

Tower Sites and Communication Facilities

Modern tower sites and communication facilities and the service they provide are necessary infrastructure, similar to electricity, natural gas, telephone and cable service. Telecommunication services are important for a favorable business environment for new economic growth and for the quality of life of County residents. Like other industrial uses, telecommunication towers must be located with consideration of the impact on surrounding properties and the qualities of the rural landscape. The County will protect its citizens from an uncontrolled proliferation of facilities and will carefully evaluate proposals to minimize the visual impact for those residents in the immediate area and for those in the larger community who view the facility from a distance. The policies below identify performance standards and policies to be applied to new telecommunications sites as they are proposed.

Policies for Tower Sites and Communication Facilities

1. Service to Remote Users: The County will encourage new facilities that fill existing significant gaps in the ability of remote users to access the local and national communication network.

Verizon Wireless ("VZW") currently has little to no coverage in the subject area. The proposed monopole will provide improved wireless service to surrounding citizens (in-car and in-building coverage).

2. Strengthening the EMS Network: The County will encourage developers of new facilities to provide opportunities to improve the service of the County's Emergency Service Network.

In accordance with VZW's collocation policy, VZW will work with the County to provide opportunities to improve the service of the County's Emergency Service Network. VZW has a policy of permitting local governments to collocate on its towers (and within the lease area on the ground for ground equipment) at no charge for the purpose of providing public emergency services. Such collocation is contingent on a structural analysis and a no-rent lease providing detailed information regarding the equipment to be placed on the monopole and on the ground. Collocation is contingent on there being sufficient room on the monopole and within the lease area for the proposed equipment. VZW reserves the right to use the uppermost locations on the monopole for VZW antennas.

3. Co-location: The County will encourage each new applicant to cooperate with prospective users who request rights to co-locate transmission and reception hardware.

In accordance with VZW's collocation policy, VZW will cooperate with prospective users who request rights to co-locate transmission and reception hardware.

4. Strategic Planning: Each applicant must show that the proposal contributes to the existing inventory of facilities and service levels and that other facilities, structures or alternatives are not available to provide the service under consideration. Current plans for service in and around the County and region must be demonstrated to the County's satisfaction.

VZW has provided the following documentation to show that the proposal contributes to the existing inventory of facilities and service levels and that other facilities, structures or alternatives are not available to provide the service under consideration:

- *Map of all wireless telecommunications facility sites within Franklin County;*
- *Inventory of all VZW sites in Franklin County and within 5 miles of the border thereof.*

There are no wireless telecommunications facilities within 5 miles of the subject property, and there are no other collocation opportunities (e.g. utility towers or other tall structures) within the needed coverage area. Therefore, the proposed monopole will provide a much-needed service to citizens in the surrounding area.

5. Evaluation of Visibility: Each new applicant will include sufficient information to enable the County to measure the visibility of the facility.

VZW conducted a balloon test and provided photo-simulations that show the limited visibility of the proposed monopole (see attached photosims).

6. Mitigation of Impacts: Objectionable aspects of individual facilities should be addressed through a combination of realistic performance standards, buffering, setbacks, consideration of less intrusive alternative locations and mitigation strategies such as camouflage, concealment, disguise, and/or the placement of towers with less height.

VZW conducted a balloon test and provided photosims that show the limited visual impact of the monopole on the surrounding area. The proposed monopole will have limited visibility for the following reasons:

- *VZW is proposing a steel monopole, which has much less visual impact than a lattice tower or guy-wired tower;*
- *The tower will be over 900 feet from Ferrum Mountain Road and over 200 feet from the closest adjacent property line (southern property line – property owned by Susan and Richard Jamison);*
- *The tower will have limited visibility and the ground equipment will have no visibility due to existing trees and the strategic location on the property away from roads and residences (see attached photosims);*
- *The property is heavily wooded and very few trees must be removed to construct the tower;*
- *VZW, although not required, has provided a 100 foot wooded buffer around the leased area in order to ensure that the tower remains screened to the maximum extent possible.*

7. Lighting: New facilities shall not be artificially lighted, unless required by the FAA or other applicable authority. If lighting is required, the lighting alternatives and design chosen must cause the least disturbance to surrounding views.

This monopole will comply with all FAA lighting requirements. Since the monopole will be under 200' and greater than five miles from the nearest airport, it is not expected that the FAA will require any lighting on the monopole.

8. Abandoned Towers: The County will request applicants to notify the County at such time that the tower becomes inoperable or that its intended purpose is no longer needed. The County will have the right to require that the then tower owners remove the tower, if it is not used for a period of six (6) months. The County may require a bond for the removal of said tower.

VZW will notify the County at such time that the monopole becomes inoperable or that its intended purpose is no longer needed and will make arrangements for removal, if required.

9. Safety Certification: The applicant must demonstrate that any proposed facility shall not create a safety, health or other hazard, and that regular monitoring as well as current and overall maintenance is assured, listing all responsible parties. After construction of any facility that becomes unsafe shall be immediately repaired. If the unsafe situation is not corrected in a timely manner, the County shall act appropriately to cause the facility to be removed.

VZW has provided a complete analysis (attached) that provides an independent determination and certification that the proposed monopole will comply with FCC exposure limits and guidelines for human exposure to radiofrequency electromagnetic fields. Should the facility become unsafe, it shall be repaired immediately.

1831 RADY COURT
RICHMOND, VA 23222

PROJECT INFORMATION:

CALLAWAY
RAW LAND
8606 FERRUM MOUNTAIN ROAD
CALLAWAY, VA 24067
FRANKLIN COUNTY

10/21/2016

ISSUED FOR:

ZONING

REV. DATE: ISSUED FOR:

CONSULTANT:

Kimley-Horn

1700 WILLOW LAWN DRIVE, SUITE 200
RICHMOND, VA 23220

CONSULTANT:

OWNER: VERIZON WIRELESS
LIC. NO. 039045
10/21/2016

COVER SHEET

SHEET NUMBER: 0

T1

11055044



1831 RADY COURT
RICHMOND, VA 23222

**CALLAWAY
RAW LAND
SITE ADDRESS**

6606 FERRUM MOUNTAIN ROAD, CALLAWAY, VA 24067
BLACKWATER MAGISTERIAL DISTRICT
FRANKLIN COUNTY

LATITUDE: 38° 59' 59.63" N
LONGITUDE: 80° 02' 46.30" W
TAX PARCEL ID: 61-7, 58.25 ACRES (TOTAL)
ZONING: NZ (NO ZONING)
SETBACK: 234' (120% OF 195' TOWER)
DISTURBED AREA: 0.89± ACRES
GROUND ELEVATION = 1397± ABOVE MEAN SEA LEVEL (AMSL)

**FRANKLIN COUNTY
DEPARTMENT OF PLANNING AND COMMUNITY
DEVELOPMENT**
120 EAST COURT STREET
ROCKY MOUNT, VA 24151
PHONE: (540) 483-3027

PERMIT INFORMATION

FRANKLIN CO. SHERIFF'S DEPT.
70 EAST COURT STREET
ROCKY MOUNT, VA 24151
PHONE: (540) 483-3000 FOR NON-EMERGENCIES
CALLAWAY FIRE AND RESCUE
1488 FRANKLIN STREET
ROCKY MOUNT, VA 24151
PHONE: (540) 483-3091 FOR NON-EMERGENCIES

EMERGENCY PHONE: 911

EMERGENCY CONTACTS



DRIVING DIRECTIONS

FROM RICHMOND: TAKE I-64 EAST ~4.5 MILES. MERGE ONTO INTERSTATE 81 AT MILE MARKER 191. TAKE EXIT 43 ONTO INTERSTATE 81/STATE ROUTE 230. REMAIN ON STATE ROUTE 230 AFTER INTERSTATE 81 ENDS. DRIVE 97.5 MILES AND TURN RIGHT ONTO BETHANY ROAD. DRIVE 4.5 MILES AND TURN RIGHT ONTO BETHANY ROAD. DRIVE 4.5 MILES INTO TOWN OF CALLAWAY. TURN RIGHT ONTO FERRUM MOUNTAIN ROAD. DRIVE 4.5 MILES AND TURN INTO DRIVEWAY MARKED AS 8606 FERRUM MOUNTAIN ROAD.

LOCALITY:
FRANKLIN COUNTY

STATE:
VIRGINIA

TOWER TYPE:
PROPOSED MONOPOLE TOWER

PROPOSED TOWER HEIGHT:
195' ABOVE GROUND LEVEL (AGL)
195' TO HIGHEST APPENDAGE

NUMBER OF PROPOSED CARRIERS:
1 PROPOSED, 3 FUTURE

USE:
PROPOSED TELECOMMUNICATIONS TOWER
AND UNMANNED EQUIPMENT

CONSULTANT:
KIMLEY-HORN AND ASSOCIATES, INC.
1700 WILLOW LAWN DRIVE, SUITE 200
RICHMOND, VA 23220
PHONE: (804) 673-3882
ATTN.: BRIAN BREWER

DEVELOPER/APPLICANT:
VERIZON WIRELESS
1831 RADY COURT
RICHMOND, VA 23222
PHONE: (804) 778-2896
ATTN.: ALAN GUMMIO

POWER COMPANY:
DOMINION VIRGINIA POWER
PHONE: (800) 366-4357
ATTN.: CUSTOMER SERVICE

TELEPHONE COMPANY:
CENTURY LINK
PHONE: (877) 260-5458
ATTN.: CUSTOMER SERVICE

PROPERTY OWNER:
VERNON AND ALMA JEAN JONES
8606 FERRUM MOUNTAIN ROAD
CALLAWAY, VA 24067

CONTACTS

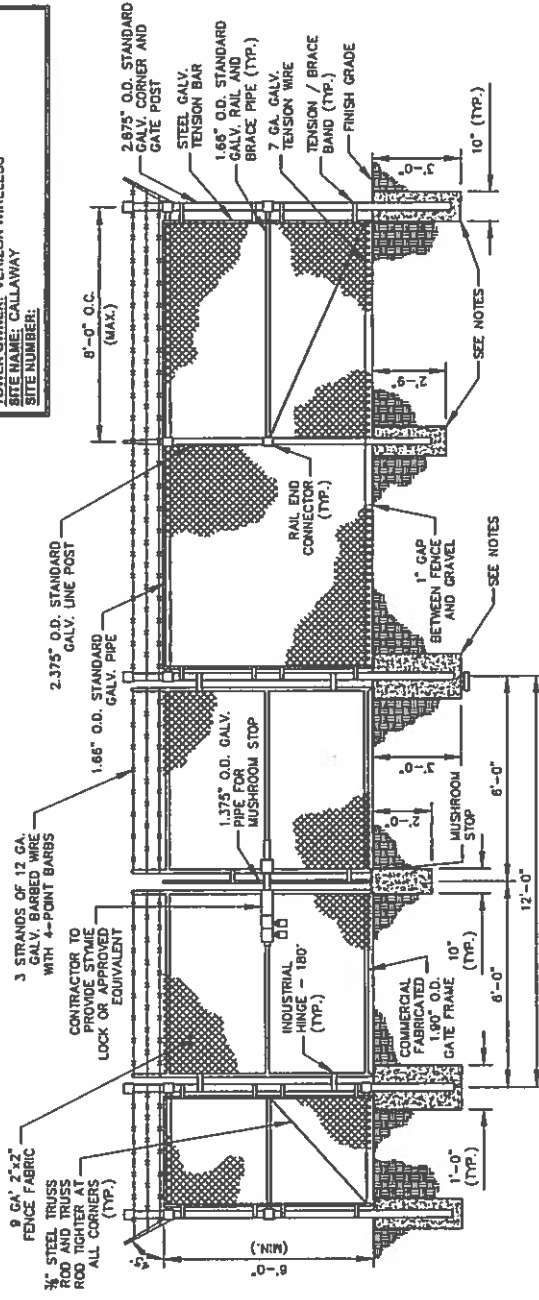
PROJECT SUMMARY

SHEET	DESCRIPTION	REV.
G-1	COVER SHEET	0
-	SITE SURVEY	0
C-2	SITE PLAN	0
C-3	ENLARGED SITE PLAN	0
C-4	ELEVATION VIEW	0
C-5	VFP EQUIPMENT PLATFORM	0
C-6	VFP EQUIPMENT DETAILS	0
C-7	COMPOUND DETAILS	0
C-8	SIGNAGE DETAILS	0
C-9	WAVEGUIDE BRIDGE & MISC. DETAILS	0
C-10	CIVIL NOTES	0
C-11	GENERAL NOTES	0
SHEET INDEX		



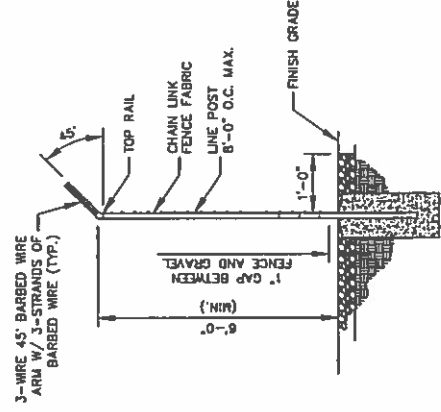
FENCE NOTES

- USE 3,000-PSI CONCRETE. FULLY CONSOLIDATED AROUND THE POST.
- WHERE THE POST IS SET IN ROCK OR CONCRETE, CORE A HOLE 12" DEEP AND 1" LARGER IN DIAMETER THAN THE POST. PLACE THE POST AND GROUT IN PLACE USING NON-SHRINK GROUT.
- ALL POSTS MUST BE PLUMB AND ALIGNED WITH ONE ANOTHER IN BOTH HORIZONTAL AND VERTICAL PLANES.
- CORNERS AND GATEPOSTS FOR CHAIN LINK FENCE SHALL BE OF BARBED WIRE TO PROVIDE TENSIONING FOR THE BARBED WIRE.
- PROVIDE MORALS AND BRACING AT ALL CORNER POSTS WHERE THE FENCE CHANGES DIRECTION BY MORE THAN 30 DEGREES. BRACING SHALL BE SET AND INSTALLATION OF THE FENCE SHALL PROVIDE FOR NO MORE THAN A 1" GAP BETWEEN THE BOTTOM OF THE FENCE MATERIAL AND FINISH GRADE.
- CONTRACTOR SHALL PROVIDE HOLD OPEN DEVICES FOR ALL GATES AT THE SPECIFIED OPEN POSITIONS. OTHER TYPE DEVICES ARE NOT AUTHORIZED.
- CONTRACTOR SHALL ALSO PROVIDE A MUSHROOM TYPE RECEIVER AT THE CLOSE POSITION.



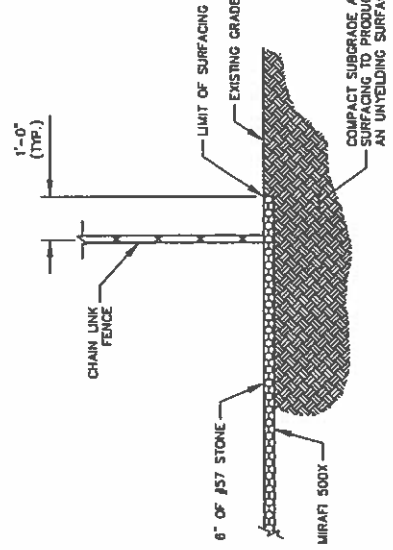
CHAIN LINK FENCE AND GATE ELEVATION

NOT TO SCALE



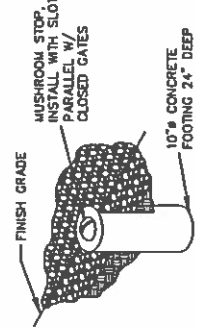
SECTION @ FENCE

NOT TO SCALE



SITE COMPOUND SURFACE DETAIL

NOT TO SCALE



MUSHROOM STOP

NOT TO SCALE

verizon

1531 RADY COURT
RICHMOND, VA 23221

PROJECT INFORMATION:

CALLAWAY
RAW LAND
6600 PERIM MOUNTAIN ROAD
RICHMOND, VA 23234
FRANKLIN COUNTY

10/21/2016

PERMIT ISSUE DATE:

ZONING

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

Kimley»Horn

1710 WILLOW LAUREL DRIVE, SUITE 200
RICHMOND, VA 23220

CONSULTANT

DESIGNED BY: JNC

CHECKED BY: DBB

DATE: 10/21/2016

PROJECT: 10/21/2016

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS

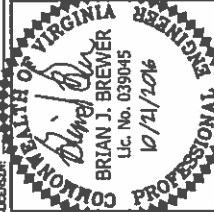
REVISIONS

REVISIONS

REVISIONS

REVISIONS

REVISIONS



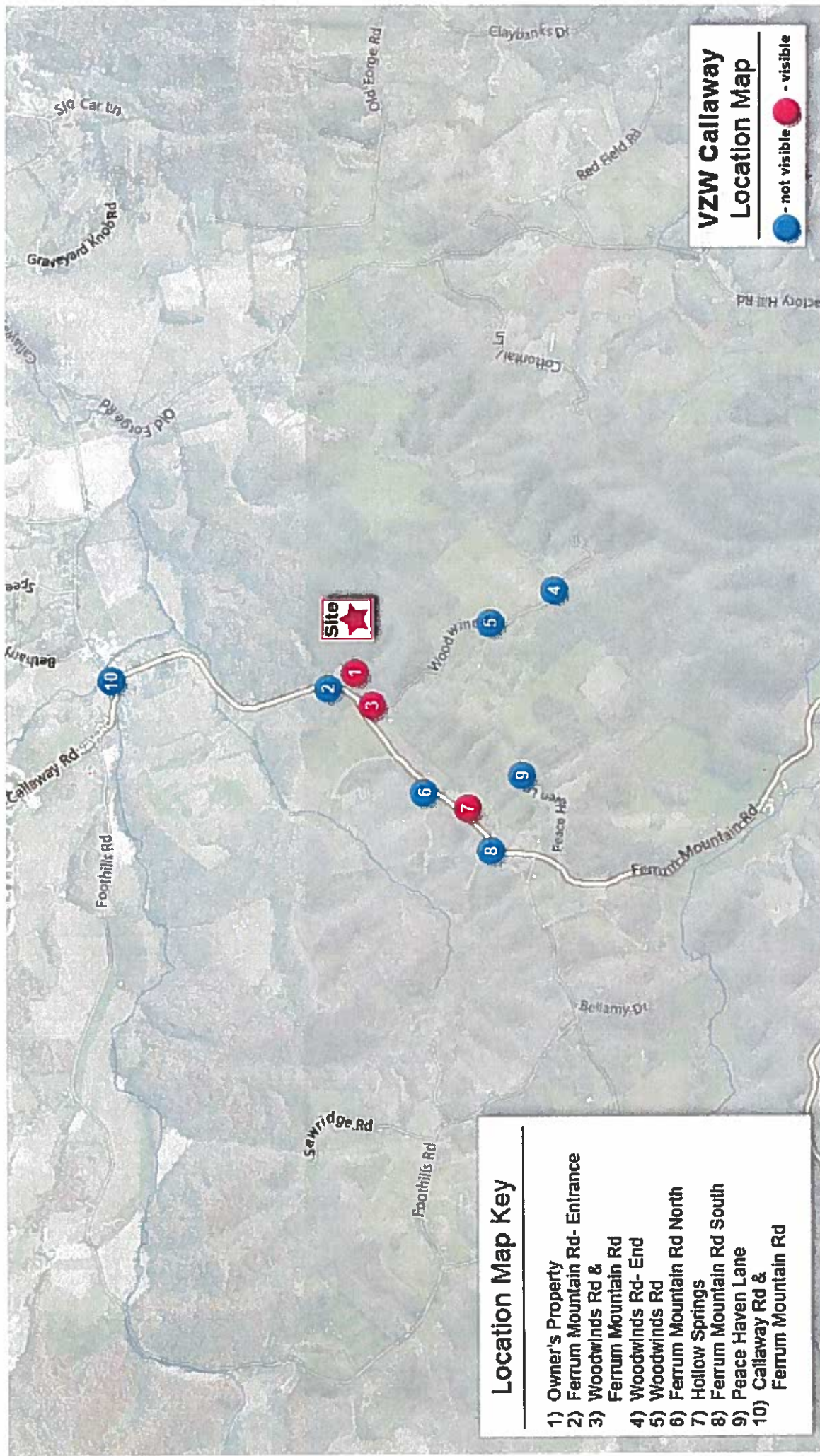
**COMPOUND
DETAILS**

C-7

0

11/05/2014

Copyright: Kimley-Horn and Associates, Inc. 2014



**VZW Callaway
Location Map**

● - not visible ● - visible

- Location Map Key**
- 1) Owner's Property
 - 2) Ferrum Mountain Rd- Entrance
 - 3) Woodwinds Rd & Ferrum Mountain Rd
 - 4) Woodwinds Rd- End
 - 5) Woodwinds Rd
 - 6) Ferrum Mountain Rd North
 - 7) Hollow Springs
 - 8) Ferrum Mountain Rd South
 - 9) Peace Haven Lane
 - 10) Callaway Rd & Ferrum Mountain Rd



Site Name: VZW Callaway
Wireless Communication Facility
6606 Ferrum Mountain Road
Callaway, VA 24067

Photograph Information:
#1- Owner's Property
View from the West
Showing the Proposed Site



NB&C
ENGINEERING
SERVICES, LLC
THE QUALITY OF OUR WORK IS OUR COMMITMENT



Site Name: VZW Callaway
Wireless Communication Facility
6606 Ferrum Mountain Road
Callaway, VA 24067

Photograph Information:
#3- Woodwinds Rd & Ferrum
Mountain Rd
View from the South
Showing the Proposed Site



NB&C
ENGINEERING
SERVICES, LLC
2300 LISA LANE, SUITE 100
HANOVER, MD 21076



Site Name: VZW Callaway
Wireless Communication Facility
6606 Ferrum Mountain Road
Callaway, VA 24087

Photograph Information:
#7- Hollow Springs
View from the Southwest
Showing the Proposed Site



NB&C
ENGINEERING
SERVICES, LLC.
12802 ROCKY HILL LANE, SUITE 100
HANNOVER, MD 21075

MILLENNIUM ENGINEERING, P.C.
508 Ferncastle Drive
Downingtown, Pennsylvania 19335

Cell: 610-220-3820
www.millenniumengineering.net

Fax: 610-458-8612
Email: pauldugan@comcast.net

March 22, 2013

Attn: Drew C. Patterson, Planner/Zoning Manager
Network Building & Consulting, LLC
7380 Coca Cola Drive, Suite 106
Hanover, MD 21076

Re: RF Safety FCC Compliance of Proposed Communications Facility
Site Name: Callaway, Proposed 195' Monopole
6606 Ferrum Mountain Road, Callaway, VA 24067 (Franklin County)

Dear Mr. Patterson,

I have performed a complete analysis to provide an independent determination and certification that the proposed Verizon Wireless communications facility at the above referenced property will comply with Federal Communications Commission (FCC) exposure limits and guidelines for human exposure to radiofrequency electromagnetic fields (Code of Federal Regulation 47 CFR 1.1307 and 1.1310). As a registered professional engineer I am under the jurisdiction of the State Registration Boards in which I am licensed to hold paramount the safety, health, and welfare of the public and to issue all public statements in an objective and truthful manner.

The proposed communications facility consists of a proposed 195' lattice tower. The proposed Verizon Wireless antenna configuration from the information furnished to me consists of (1) 700 MHz (LTE) antenna (A: Antel BXA-70090/8CF, B/G: Antel BXA-70063/8CF or equivalent), (1) 850 MHz (cellular) antenna (A: Antel BXA-80080/8CF, B/G: Antel BXA-80063/8CF or equivalent), (1) 1900 MHz (PCS) antenna (A: Antel BXA-185085/16CF_2, B/G: Antel BXA-185063/16CF or equivalent) and (1) 2100 MHz (AWS-LTE) antenna (Antel BXA-171063/12CF or equivalent) on each of three faces (total of 12 antennas) spaced with azimuths of 90/220/340 degrees on the horizontal plane with a centerline of 195' above ground level and no mechanical downtilt. Transmitting from these antennas will be (1) 700 MHz (LTE) wideband channel, up to (8) 850 MHz (cellular) CDMA channels, up to (6) 1900 MHz (PCS) CDMA channels and (1) 2100 MHz (AWS-LTE) wideband channel per face.

The following assumptions are made for reasonable upper limit radiofrequency operating parameters for the proposed facility due to Verizon Wireless antennas alone to accommodate all licensed frequency bands:

- (1) 700 MHz (LTE) transmit antenna (BXA-70090/8CF or BXA-70063/8CF) per face at 0-10 degrees mechanical downtilt
- (1) 850 MHz (cellular) transmit antenna (BXA-80080/8CF or BXA-80063/8CF) per face at 0-10 degrees mechanical downtilt
- (1) 1900 MHz (PCS) transmit antenna (BXA-185085/16CF_2 or BXA-185063/16CF) per face at 0-10 degrees mechanical downtilt
- (1) 2100 MHz (AWS-LTE) transmit antenna (BXA-171063/12CF) per face at 0-10 degrees mechanical downtilt

- (1) 700 MHz (LTE) wideband channel/face at 40W max power/channel before cable loss/antenna gain
- (8) 850 MHz (cellular) CDMA channels/face at 20W max power/channel before cable loss/antenna gain
- (6) 1900 MHz (PCS) CDMA channels/face at 16W max power/channel before cable loss/antenna gain
- (1) 2100 MHz (AWS-LTE) wideband channel/face at 40W max power/channel before cable loss/antenna gain
- The facility would be at or near full capacity during busy hour

Using the far-field power density equations from FCC Bulletin OET 65, the power density at any given distance from the antennas is equal to $0.360(ERP)/R^2$ where R is the distance to the point at which the exposure is being calculated. The given equation is a conversion of the OET 65 power density equation for calculating power density given the distance in feet and the result in metric units ($\mu\text{W}/\text{cm}^2$). This calculated power density assumes the location is in the main beam of the vertical pattern of the antenna. After making an adjustment for the reduction in power density due to the vertical pattern of the transmit antenna, the calculated ground level power density is below $1 \mu\text{W}/\text{cm}^2$ at any distance from the antenna system of Verizon Wireless. This calculation uses parameters greater than what they have defined as their typical operating parameters for this facility.

The "Upper C Block" 700 MHz (LTE) transmit frequencies (746-757 MHz), which Verizon Wireless is licensed by the FCC to operate, have an uncontrolled/general population maximum permissible exposure (MPE) FCC limit of $497 \mu\text{W}/\text{cm}^2$. The "B Band" 850 MHz (cellular) transmit frequencies (880-894 MHz), which Verizon Wireless is also licensed by the FCC to operate, have an uncontrolled/general population MPE FCC limit of $587 \mu\text{W}/\text{cm}^2$. The "C4 Block" and "F Block" 1900 MHz (PCS) transmit frequencies (1980-1985, 1970-1975 MHz), which Verizon Wireless is also licensed by the FCC to operate, have an uncontrolled/general population MPE FCC limit of $1000 \mu\text{W}/\text{cm}^2$ or $1 \text{ mW}/\text{cm}^2$. The "B Block" and "F Block" 2100 MHz (AWS-LTE) transmit frequencies (2120-2130, 2145-2155 MHz), which Verizon Wireless is also licensed by the FCC to operate, have an uncontrolled/general population MPE FCC limit of $1000 \mu\text{W}/\text{cm}^2$ or $1 \text{ mW}/\text{cm}^2$. Therefore, the exposure at ground level at any distance from the structure would be substantially below 1 % of the FCC exposure limits due to Verizon Wireless antennas alone. The extremely low ground exposure levels are due to the elevated positions of the antennas on the structure and the low power which these systems operate. See Figures 1 and 2 in back of this report which discuss the relationship between height, proximity or distance, and orientation to level of electromagnetic field exposure.

From the standpoint of RF exposure, the presence of Verizon Wireless would not preclude the future addition of other tenants or licensees including emergency or other municipal services which benefit the public from collocation on this structure. There is a substantial margin of safety to allow for the addition of transmit antennas of other communications services. Keep in mind that continuous exposure at 100 % of standard is considered by the scientific community as just as safe as 1 % of standard since the exposure limits themselves contain a large margin of safety.

The International Commission on Non-Ionizing Radiation Protection (ICNIRP), which is an association under the International Radiation Protection Association (IRPA), established exposure limits or guidelines in 1998 similar to the FCC limits. The ICNIRP is a formally recognized non-government organization in non-ionizing radiation for the World Health Organization and the International Labour Office. While the ICNIRP has no jurisdiction over FCC licensees, the composite ground level exposure of the proposed facility will be below 1 % of the ICNIRP exposure limits.

In summary, the proposed communications facility will comply with all applicable exposure limits and guidelines adopted by the FCC governing human exposure to radiofrequency electromagnetic fields (FCC Bulletin OET 65). Federal law (FCC Rule Title 47 CFR 1.1307 and 1.1310) sets the national standard for compliance with electromagnetic field safety. The FCC exposure limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc.,

(IEEE) and adopted by the American National Standards Institute (ANSI). Thus, there is full compliance with the standards of the IRPA, FCC, IEEE, ANSI, and NCRP.

General Information on Electromagnetic Field Safety

Verizon Wireless facilities transmit and receive low power electromagnetic fields (EMF) between base station antennas and handheld portable cell phones. The radiofrequency energy from these facilities and devices is non-ionizing electromagnetic energy. Non-ionizing, unlike X-Rays or other forms of potentially harmful energy in the microwave region, is not cumulative over time nor can the energy change the chemical makeup of atoms (e.g. strip electrons from ions). "Non-ionizing" simply means that the energy is not strong enough to break ionic bonds.

Safe levels of electromagnetic fields were determined by numerous worldwide organizations, such as the International Committee for Non-Ionizing Radiation Protection, a worldwide multi-disciplinary team of researchers and scientists studying the effects of non-ionizing radiofrequency energy such as that emitted by base stations or cell phones. The FCC did not arbitrarily establish their own standards, but adopted the recommendations of all leading organizations that set standards and research the subject such as the Institute of Electrical and Electronics Engineers (IEEE), American National Standards Institute (ANSI), and National Council on Radiation Protection and Measurements (NCRP).

When Verizon Wireless is located on an antenna structure such as a self-supporting lattice type tower, monopole, guyed tower, watertank, etc. the antennas are typically 10 meters or more above ground level (10 meters = 32.81 feet). With the relatively low power and elevated positions of the antennas on the structure with respect to ground level, the maximum ground level exposure can rarely approach 1 % of the applicable FCC exposure limit regardless of how many sets of antennas are collocated on the structure. For this reason, the FCC considers the facilities "categorically excluded" from routine evaluation at antenna heights above 10 meters (or above 32.81 feet). Categorical exclusion exempts a site from routine on-site evaluation. However, the facility is not excluded from compliance with the federal exposure limits and guidelines. The types of facilities used by Verizon Wireless typically elevated on antenna structures (away from access to close proximity, i.e. greater than 10 meters or 32.81 feet) simply cannot generate ground level exposure levels that approach the limits under any circumstances.

From a regulatory perspective, the FCC has sole jurisdiction over the regulation of electromagnetic fields from all facilities and devices. The FCC has established guidelines and limits over emissions and exposure to protect the general public. The FCC also has certain criteria that trigger when an environmental evaluation must be performed. The criteria are based on distance from the antennas (accessibility) and transmit power levels.

CONCLUSIONS:

- 1) The proposed communications facility will comply with electromagnetic field safety standards by a substantial margin (well below 1 %) in all publicly accessible areas. This includes the base of the proposed structure and any areas in proximity to the proposed structure.
- 2) Verizon Wireless takes appropriate measures to ensure that all telecommunications facilities (including this proposed facility) comply with applicable exposure limits and guidelines adopted by the FCC governing human exposure to radiofrequency electromagnetic fields (FCC Bulletin OET 65).
- 3) In cases where such compliance exists, the subject of electromagnetic field safety is preempted. The Telecommunications Act of 1996 states that: "No state or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the

environmental effects of radio frequency emissions to the extent that such facilities comply with the [FCC's] regulations concerning such emissions." Telecommunications Act of 1996, § 332[c][7][B][iv].

Respectfully,



Paul Dugan, P.E.
Registered Professional Engineer
Virginia License Number 036239



MAP OF VZW SITES

